

SEPTEMBER 2011

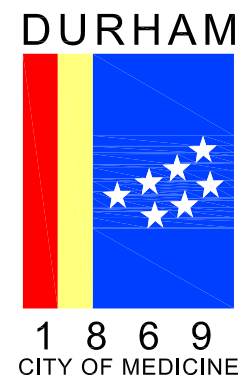
STORMWATER DRAINAGE REPAIRS AND IMPROVEMENTS

STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

CONTRACT SD-2012-01



| SHEET NO. | SHEET NAME / PROJECT SITE |
|-----------|----------------------------------|
| 1 | COVER SHEET |
| 2 | GENERAL & PROJECT NOTES |
| 3 | PROJECT SITES MAP |
| 4 | GILBERT STREET |
| 5 | SHOCCOREE DRIVE |
| 6 | WEST KNOX STREET |
| 7 | LONG MEADOW PARK |
| 8 | SHERBON DRIVE |
| 8A | SHERBON DRIVE CATCH BASIN DETAIL |
| 9 | NINTH STREET |
| 10 | TWIN LAKES PARK |
| 10A | TWIN LAKES PARK |
| 11 | ALEXANDER AVENUE |
| 12 | ALABAMA STREET |
| 13 | CAROLINA AVENUE |
| 14 | ASPHALT PAVING / REPAIR DETAILS |



CITY OF DURHAM, NORTH CAROLINA
DEPARTMENT OF PUBLIC WORKS
STORMWATER SERVICES DIVISION
101 CITY HALL PLAZA
DURHAM, NORTH CAROLINA 27701
PHONE: (919) 560-4326
FAX: (919) 560-4316
<http://www.durhamnc.gov/departments/works/stormwater.cfm>

PROJECT CONTACT: SHEA S. BOLICK, P.E.
PHONE: (919) 560-4326, EXT. 30270
E-MAIL: Shea.Bolick@durhamnc.gov

\\Durham_pw\public_works\SW\Division_Files\Infrastructure\Drainage\Projects\ConstructionContracts\SD-2012-01\AutoCAD\SD-2012-01_02_GeneralNotes.dwg

GENERAL NOTES:

- 1. BASE MAP INFORMATION PROVIDED ON THESE DRAWINGS WAS DERIVED FROM CITY OF DURHAM GEOGRAPHIC INFORMATION SYSTEM UTILITY INVENTORIES AND INFORMATION. BASE MAP INFORMATION IS SCHEMATIC. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION ON ANY PROJECT SITE. CONTRACTOR SHALL INFORM THE RESIDENT PROJECT REPRESENTATIVE OF ANY DISCREPANCY BETWEEN EXISTING CONDITIONS AND THESE DRAWINGS WHERE IT IS ANTICIPATED TO AFFECT CONSTRUCTION.
- 2. LOGISTICS OF EACH PROJECT SITE SHALL BE DISCUSSED IN DETAIL BY THE PROPERTY OWNER, ENGINEER, RESIDENT PROJECT REPRESENTATIVE, AND CONTRACTOR AT INDIVIDUAL PRE-RECONSTRUCTION MEETINGS FOR EACH PROJECT SITE PRIOR TO ANY CONSTRUCTION.
- 3. ALL CONTRACTORS, AT THE TIME OF BID, SHALL HAVE A VALID NORTH CAROLINA CONTRACTOR LICENSE AND UTILITY CONTRACTOR LICENSE. THESE LICENSES SHALL NOT EXPIRE DURING THE EXPECTED TIME OF CONSTRUCTION.
- 4. CONTRACTOR SHALL MAINTAIN A COPY OF THE CONTRACT DOCUMENTS (INCLUDING DRAWINGS), PERMITS, AND PERMIT PROVISIONS ON THE ACTIVE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION.
- 5. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UNDERGROUND UTILITIES AND SHALL COORDINATE ALL WORK WITH THE RESIDENT PROJECT REPRESENTATIVE AND UTILITY COMPANIES (SEE UTILITY LOCATION NOTES ON THIS SHEET). UTILITY LOCATIONS SHOWN ON THESE DRAWINGS ARE APPROXIMATE.
- 6. UNDERGROUND AND ABOVE GROUND FACILITIES HAVE BEEN SHOWN PICTORIALY ON THE DRAWINGS. HOWEVER, CONTRACTOR SHALL CONTACT THE APPROPRIATE LOCAL UTILITY COMPANIES TO FLAG EXISTING UNDERGROUND LINES PRIOR TO EXCAVATION.
- 7. WHEN REQUIRED BY THE RESIDENT PROJECT REPRESENTATIVE, CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR INDIVIDUAL PROJECT SITES PRIOR TO COMMENCING WORK. PLAN SHALL CONFORM TO THE REQUIREMENTS OF THE RESIDENT PROJECT REPRESENTATIVE, THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RULES AND REGULATIONS, AND THE MOST CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- 8. CONTRACTOR SHALL PROTECT EXISTING LANDSCAPING. ALL DISTURBED EXISTING LANDSCAPED AREAS TO REMAIN SHALL BE RESTORED TO EXISTING ELEVATIONS, SEEDED, AND MULCHED AS APPROPRIATE. LANDSCAPING IS INCLUDED IN THIS CONTRACT AND ALL AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION OR BETTER.
- 9. CONTRACTOR SHALL AVOID DAMAGING EXISTING PAVEMENT TO REMAIN. ALL EXISTING PAVEMENT TO REMAIN DAMAGED AS A RESULT OF CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.
- 10. CONTRACTOR SHALL REPLACE ALL REMOVED OR DAMAGED PAVEMENT TO REMAIN WITH SAME, INCLUDING MATERIAL, COLOR, AND TEXTURE. REPAIRED PAVEMENT SHALL BE REPLACED TO EXISTING PAVEMENT ELEVATIONS. CONTRACTOR SHALL NOT PROCEED WITH PAVING UNTIL ALL COMPACTION AND PROOFROLLING TESTS HAVE BEEN RECEIVED AND APPROVED BY THE RESIDENT PROJECT REPRESENTATIVE.
- 11. CONTRACTOR SHALL NOT IMPEDE ACCESS TO EXISTING BUILDINGS OR AREAS AT THE PROJECT SITE WITHOUT THE APPROVAL OF THE PRIVATE PROPERTY OWNER AND THE RESIDENT PROJECT REPRESENTATIVE. IN AREAS WHERE ACCESS MAY BE RESTRICTED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE PROPERTY OWNER AND RESIDENT PROJECT REPRESENTATIVE A MINIMUM OF 72-HOURS IN ADVANCE OF A PROPOSED RESTRICTION OF ACCESS. CONTRACTOR SHALL MAINTAIN ALL UTILITY SERVICES FOR USE WITHOUT INTERRUPTION.
- 12. ANY UTILITY SERVICE INTERRUPTIONS SHALL BE COORDINATED WITH THE PROPERTY OWNER AND RESIDENT PROJECT REPRESENTATIVE A MINIMUM OF 15-DAYS IN ADVANCE OF THE PROPOSED INTERRUPTION.
- 13. CONTRACTOR SHALL PROVIDE A PRELIMINARY CONSTRUCTION SCHEDULE PRIOR TO BEGINNING CONSTRUCTION, AND SHALL UPDATE SCHEDULE MONTHLY OR AS REQUIRED BY THE RESIDENT PROJECT REPRESENTATIVE. CONTRACTOR SHALL COORDINATE WITH THE RESIDENT PROJECT REPRESENTATIVE TO PRODUCE THE CONSTRUCTION SCHEDULE.
- 14. ALL LENGTHS, BEND ANGLES, SIZES, ETC. INDICATED ON THE DRAWINGS ARE APPROXIMATE AND ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL DETERMINE ACTUAL LENGTHS, BEND ANGLES, SIZES, ETC. PRIOR TO ORDERING ANY MATERIALS AND PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- 15. NO SOILS INVESTIGATION HAS BEEN CONDUCTED FOR THE PROJECT SITES IN THIS CONTRACT.
- 16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DISCIPLINE AND TRADE COORDINATION.
- 17. CONTRACTOR SHALL DIG TEST PITS AT ALL NEW UTILITY CROSSINGS WITH EXISTING UTILITIES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF THE CONTRACTOR DETERMINES THERE IS A CONFLICT, CONTRACTOR SHALL IMMEDIATELY INFORM THE RESIDENT PROJECT REPRESENTATIVE FOR RESOLUTION.

PROJECT NOTES:

- 1. SEE SHEET 14 FOR ASPHALT PAVING / REPAIR DETAILS.
- 2. SEE THE CURRENT EDITION OF THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING & DESIGN MANUAL FOR ALL EROSION AND SEDIMENT CONTROL DETAILS.
- 3. THE PRIORITY LIST OF PROJECT SITES IS AS FOLLOWS:
 - 3.1. NINTH STREET
 - 3.2. CAROLINA AVENUE
 - 3.3. ALEXANDER AVENUE
 - 3.4. ALABAMA STREET
 - 3.5. SHERBON DRIVE
 - 3.6. GILBERT STREET
 - 3.7. LONG MEADOW PARK
 - 3.8. TWIN LAKES PARK
 - 3.9. WEST KNOX STREET
 - 3.10. CAROLINA AVENUE
- 4. CONTRACTOR MAY REQUEST A CHANGE IN THE PRIORITY LIST OF PROJECT SITES. CONTRACTOR SHALL REQUEST A CHANGE IN THE PRIORITY LIST FROM THE RESIDENT PROJECT REPRESENTATIVE.
- 5. VIDEO INSPECTION OF EXISTING AND REPAIRED STORMWATER DRAINAGE SYSTEMS IS INCLUDED IN THIS CONTRACT. SEE EACH PROJECT SITE SHEET FOR THE LIMITS OF VIDEO INSPECTION. CONTRACTOR SHALL VIDEO INSPECT THE EXISTING SYSTEM PRIOR TO COMMENCING CONSTRUCTION WHEN REQUIRED BY THE PLANS OR THE RESIDENT PROJECT REPRESENTATIVE. CONTRACTOR MAY BE REQUIRED TO VIDEO INSPECT THE REPAIRED SYSTEM AT THE COMPLETION OF CONSTRUCTION PRIOR TO SUBSTANTIAL COMPLETION OF EACH PROJECT SITE.
- 6. COORDINATE ALL TREE AND VEGETATION TRIMMING AND REMOVAL WITH THE RESIDENT PROJECT REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION.

EROSION AND SEDIMENT CONTROL NOTES:

PROJECT DESCRIPTION AND NARRATIVE:

THESE STORMWATER DRAINAGE REPAIR PROJECTS ARE TO BE PERFORMED ON EXISTING PUBLIC AND PRIVATE PROPERTY STORMWATER SYSTEMS. THE INTENT OF THE PROJECTS IS TO REPAIR AND STABILIZE FAILING SYSTEMS. TYPICAL WORK INCLUDES PIPE REPLACEMENT, CURB & GUTTER RE-ESTABLISHMENT, AND THE PERMANENT STABILIZATION OF AREAS WITH CONCENTRATED FLOW.

EROSION CONTROL PREFACE:

DURING CLEARING, GRADING AND CONSTRUCTION, EROSION CONTROL WILL BE ACCOMPLISHED BY THE USE OF EROSION PREVENTION MEASURES. PERMANENT EROSION CONTROL WILL CONSIST OF THE VEGETATIVE STABILIZATION OF ALL DISTURBED AREAS.

SEE THE TECHNICAL SPECIFICATIONS AS WELL AS THE EROSION AND SEDIMENT CONTROL DETAILS INCLUDED IN THESE DRAWINGS FOR MEASURES TO BE UTILIZED THROUGHOUT THE EROSION CONTROL PROCESS.

EROSION CONTROL MEASURES:

EROSION CONTROL MEASURES TO BE IMPLEMENTED IN THIS PROJECT INCLUDE (AS NECESSARY):

- 1. INSTALLATION OF TEMPORARY GRAVEL AND CONSTRUCTION ENTRANCE/EXIT.
- 2. INSTALLATION OF TEMPORARY SEDIMENT FENCE (SILT FENCE),
- 3. INSTALLATION OF TEMPORARY BLOCK AND GRAVEL INLET PROTECTION.
- 4. INSTALLATION OF TEMPORARY STONE CHECK DAM.
- 5. INSTALLATION OF RIP-RAP APRONS.
- 6. TEMPORARY STABILIZATION OF DISTURBED AREAS.
- 7. PERMANENT STABILIZATION OF FINISHED AREAS.

CONSTRUCTION SEQUENCE:

EROSION AND SEDIMENT CONTROL CONSTRUCTION SEQUENCE SHALL BE STRICTLY ADHERED TO, AS FOLLOWS:

- 1. VERIFY ALL LAND DISTURBING PERMITS NECESSARY TO BEGIN AND COMPLETE THE PROJECT HAVE BEEN OBTAINED.
- 2. SCHEDULE AND HOLD A PRE-CONSTRUCTION CONFERENCE ONE WEEK BEFORE THE START OF ANY TIMBERING, CLEARING, OR GRADING WITH THE RESIDENT PROJECT REPRESENTATIVE, PROPERTY OWNER, THE CONTRACTOR RESPONSIBLE FOR THE DISTURBANCE AND EROSION CONTROL, AND PERSONNEL FROM THE CITY OF DURHAM TO DISCUSS THE PROJECT AND EROSION CONTROL MEASURES.
- 3. A COPY OF THE EROSION AND SEDIMENT CONTROL DETAILS AND TECHNICAL SPECIFICATIONS SHALL BE AVAILABLE IN A DESIGNATED LOCATION ONSITE AT ALL TIMES. THE LOCATION SHALL ALSO BE THE DESIGNATED PLACE FOR INSPECTORS TO LEAVE INSPECTION REPORTS, COMPLIANCE NOTICES, ETC.
- 4. EROSION CONTROL MEASURES MUST BE INSTALLED PRIOR TO CLEARING ACTIVITIES.
- 5. INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT ON THE PROJECT (AS NECESSARY).
- 6. ALL EXCAVATION SHALL BE BACKFILLED DAILY UNLESS WAIVED ON A CASE BY CASE BASIS BY THE RESIDENT PROJECT REPRESENTATIVE.
- 7. ALL TEMPORARY STONE CHECK DAMS SHALL BE INSTALLED (AS NECESSARY), DOWNSTREAM OF CONSTRUCTION AND WITHIN DITCHES AT THE CONCLUSION OF THE WORK DAY.
- 8. INSTALL TEMPORARY SEDIMENT FENCE (SILT FENCE) (AS NECESSARY). THIS MEASURE WILL TRAP OR DIRECT SEDIMENT INTO CHECK DAMS.
- 9. THE CONTRACTOR SHALL INSPECT AND MAINTAIN THE EROSION CONTROL MEASURES SO THEY CONTINUE TO FUNCTION PROPERLY. REFER TO THE EROSION AND SEDIMENT CONTROL DETAILS AND TECHNICAL SPECIFICATIONS FOR SPECIFIC INSTRUCTIONS FOR EACH DEVICE. CONTRACTOR PERSONNEL RESPONSIBLE FOR EROSION CONTROL ARE ALSO RESPONSIBLE FOR TAKING THE INITIATIVE IN INSPECTING AND MAINTAINING THESE DEVICES; SO AS NOT TO WAIT FOR THE EROSION CONTROL INSPECTOR TO POINT OUT THE NEED FOR MAINTENANCE OR REPAIRS.
- 10. COMPLETE ANY REMEDIAL STABILIZATION AT THE COMPLETION OF THE PROJECT. THE CONTRACTOR SHALL ENSURE THAT ALL DISTURBED AREAS OF THE SITE FROM THIS GRADING OPERATION SHALL BE APPROPRIATELY STABILIZED AT THE CONCLUSION OF THE PROJECT. KEEP MUD AND DEBRIS OFF THE PUBLIC STREETS AT ALL TIMES.
- 11. IF MUD OR DEBRIS IS TRACKED FROM THE SITE, USE A SHOVEL AND BROOM TO REMOVE IT IMMEDIATELY.
- 12. SCHEDULE A FINAL ONSITE INSPECTION WITH THE RESIDENT PROJECT REPRESENTATIVE TO CONFIRM THAT ALL OF THE REQUIREMENTS OF THE EROSION AND SEDIMENT CONTROL DETAILS AND TECHNICAL SPECIFICATIONS HAVE BEEN COMPLETED. IF SITE IS APPROVED BY THE RESIDENT PROJECT REPRESENTATIVE, REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES.
- 13. PERMANENTLY SEED AND STABILIZE ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR 30 CALENDAR DAYS OF FINAL GRADING.
- 14. ALL FERTILIZER, LIMESTONE, GRASS SEED, MULCH AND OTHER MATERIALS FOR SEEDING SHALL COMPLY WITH THE TECHNICAL SPECIFICATIONS.

CONTRACT SD-2012-01

GENERAL AND PROJECT NOTES
STORMWATER DRAINAGE REPAIRS
SHEET NO. 2

STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 2011

UTILITY LOCATION NOTES:

THE FOLLOWING UTILITY OWNERS ARE MEMBERS OF THE BELOW LISTED ASSOCIATION AND OPERATE UNDERGROUND UTILITIES IN DURHAM COUNTY.

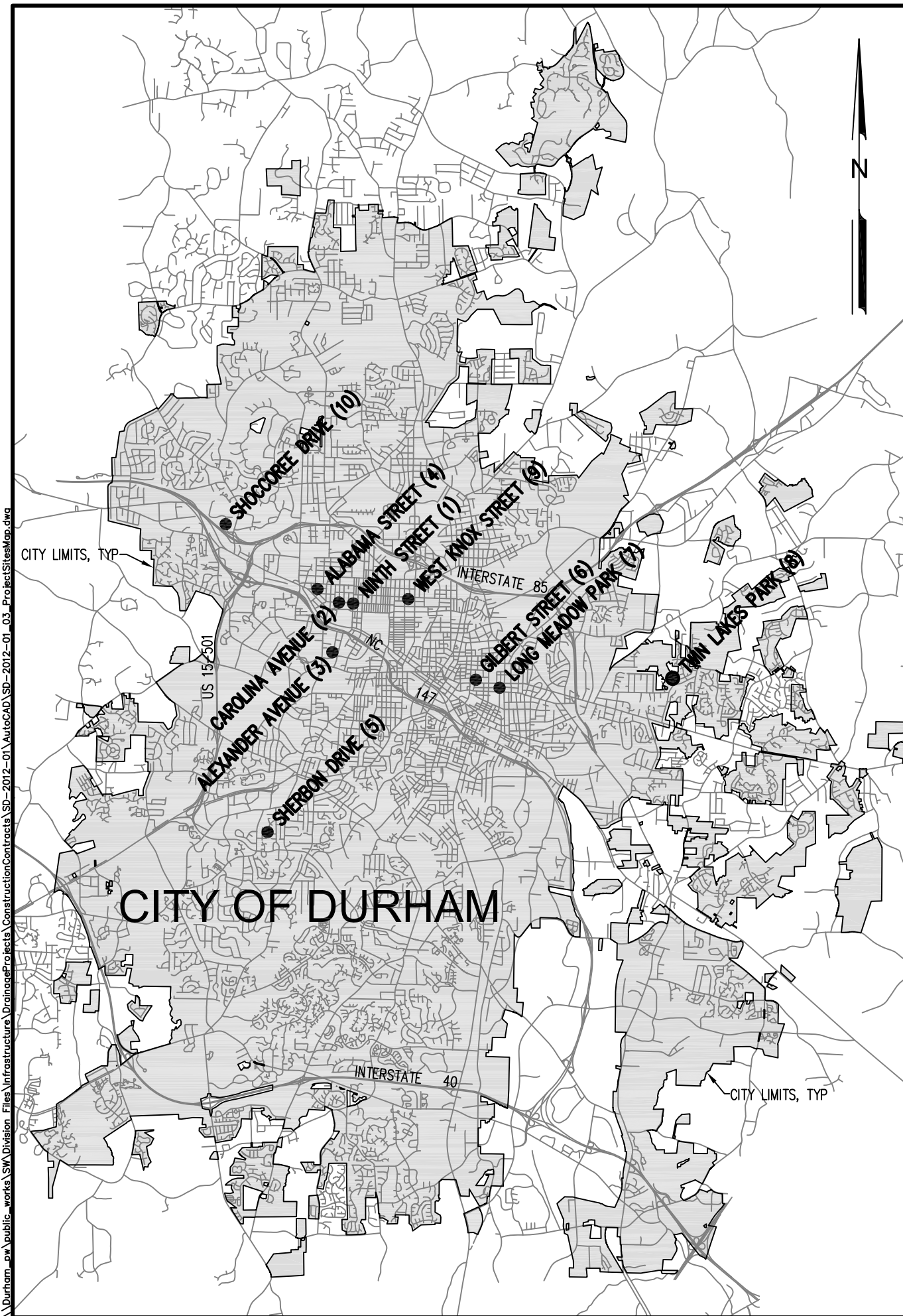
| UTILITY NAME AND ADDRESS | |
|--|--|
| PROGRESS ENERGY | P.O. BOX 1551, RALEIGH, NC 27602 |
| GENERAL TELEPHONE CO. OF THE SOUTHEAST: | P.O. BOX 611, DURHAM, NC 27702 |
| CITY OF DURHAM: | 101 CITY HALL PLAZA, DURHAM, NC 27701 |
| DURHAM CABLE VISION: | P.O. BOX 30002, DURHAM, NC 27701 |
| PUBLIC SERVICE OF NORTH CAROLINA: | P.O. BOX 1398, GASTONIA, NC 28052 |
| DUKE POWER CO.: | P.O. BOX 33189, CHARLOTTE, NC 28242 |
| SOUTHERN BELL TELEPHONE CO.: | ROOM 720, SOUTHERN NATIONAL BANK BUILDING, CHARLOTTE, NC |
| AMERICAN TELEPHONE & TELEGRAPH COMMUNICATIONS: | 900 FRANKLIN AVE., CHARLOTTE, NC 28206 |
| NORTH CAROLINA ONE-CALL CENTER | |
| PHONE: (800) 632-4949 OR 811 | |
| WEB SITE: WWW.NCOCC.ORG | |

NOTE: THE ABOVE LISTING IS OF ASSOCIATION MEMBERS ONLY. THERE IS A POSSIBILITY THAT NON-MEMBER UTILITY OWNERS ALSO OPERATE IN THE AREA.

ABBREVIATIONS:

| ABBREVIATION | DESCRIPTION |
|--------------|--|
| AASHTO | AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS |
| CB | CATCH BASIN |
| CMP | CORRUGATED METAL PIPE |
| EL | ELEVATION |
| EW | END WALL |
| FEMA | FEDERAL EMERGENCY MANAGEMENT AGENCY |
| FES | FLARED END SECTION |
| FIRM | FLOOD INSURANCE RATE MAP |
| GW | GUY WIRE |
| INV | INVERT |
| LBS | POUNDS |
| LF | LINEAR FEET |
| MAX | MAXIMUM |
| MIN | MINIMUM |
| NCDENR | NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES |
| NCDOT | NORTH CAROLINA DEPARTMENT OF TRANSPORTATION |
| NCOCC | NORTH CAROLINA ONE-CALL CENTER |
| OC | ON CENTER |
| PP | POWER POLE |
| RCP | REINFORCED CONCRETE PIPE |
| SFHA | SPECIAL FLOOD HAZARD AREA |
| SD | STORM DRAINAGE |
| SDMH | STORM DRAINAGE MANHOLE |
| SS | SANITARY SEWER |
| SSMH | SANITARY SEWER MANHOLE |
| SY | SQUARE YARDS |
| TYP | TYPICAL |

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| | |
|---|--|
| TOTAL PROJECT PRIVATE PROPERTIES (8) TOTAL PROJECT RIGHTS-OF-WAY (10) | |
| <u>GILBERT STREET</u> SEE SHEET 4 PRIVATE PROPERTIES (1) RIGHTS-OF-WAY (2) | <u>NINTH STREET</u> SEE SHEET 9 PRIVATE PROPERTIES (0) RIGHTS-OF-WAY (1) |
| <u>SHOCOREE DRIVE</u> SEE SHEET 5 PRIVATE PROPERTIES (2) RIGHTS-OF-WAY (1) | <u>TWIN LAKES PARK</u> SEE SHEET 10 CITY PROPERTY (1) RIGHTS-OF-WAY (1) |
| <u>W. KNOX STREET</u> SEE SHEET 6 PRIVATE PROPERTIES (3) RIGHTS-OF-WAY (1) | <u>ALEXANDER AVENUE</u> SEE SHEET 11 PRIVATE PROPERTIES (1) RIGHTS-OF-WAY (1) |
| <u>LONG MEADOW PARK</u> SEE SHEET 7 CITY PROPERTY (1) RIGHTS-OF-WAY (0) | <u>ALABAMA STREET</u> SEE SHEET 12 PRIVATE PROPERTIES (0) RIGHTS-OF-WAY (1) |
| <u>SHERBON DRIVE</u> SEE SHEET 8 PRIVATE PROPERTIES (1) RIGHTS-OF-WAY (1) | <u>CAROLINA AVENUE</u> SEE SHEET 13 PRIVATE PROPERTIES (0) RIGHTS-OF-WAY (1) |

CONTRACT SD-2012-01

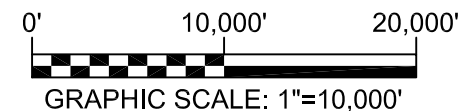
PROJECT SITES MAP

STORMWATER DRAINAGE REPAIRS

SHEET NO. 3

STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 2011



LEGEND:

PROPERTY OR RIGHT-OF-WAY LINE

ROADWAY

TOPOGRAPHIC LINE

SPOT ELEVATION

EDGE OF BUILDING/STRUCTURE

SANITARY SEWER LINE

SANITARY SEWER MANHOLE

STORM DRAINAGE CHANNEL

STORM DRAINAGE LINE

CATCH BASIN

STORM DRAINAGE MANHOLE

FLARED END SECTION

RIP RAP APRON

WATER LINE

FIRE HYDRANT

WATER VALVE

EROSION CONTROL FABRIC

CONSTRUCTION LIMITS

LIMITS OF VIDEO INSPECTION

EXISTING

PROPOSED

N/A

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N/A

- - - -

N/A

x 358.7

+358.7

|||||

N/A

---SS---

N/A

---SS---(O)---SS---

N/A

EXISTING CHANNEL

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30" RCP

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30" RCP

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30" RCP

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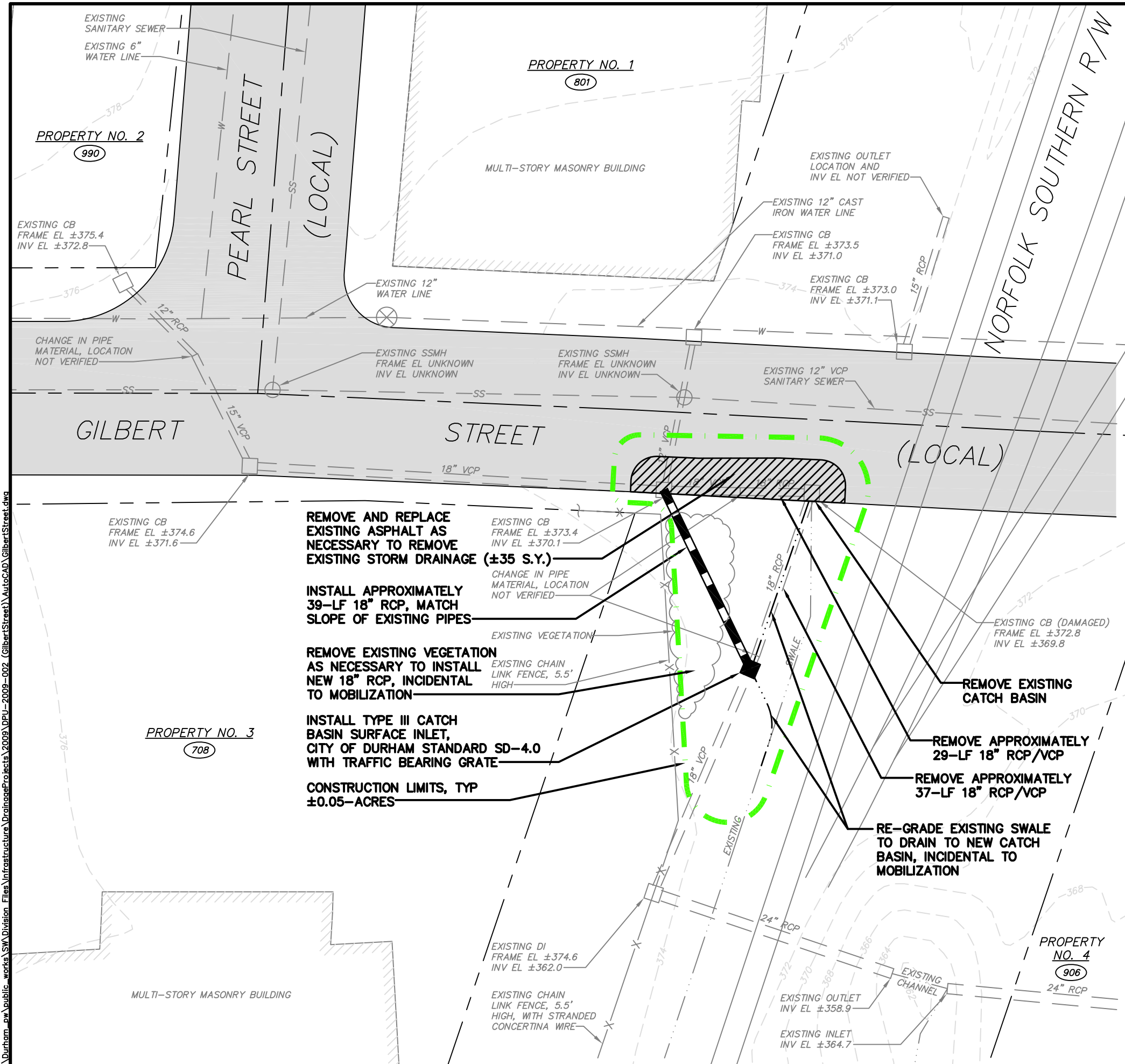
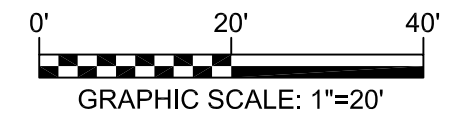
N/A

N/A

CONTRACT SD-2012-01
PROJECT DPU-2009-002
GILBERT STREET
NORFOLK SOUTHERN R/W
STORMWATER DRAINAGE PROJECT
SHEET NO. 4

STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 12, 2011
(REVISED NOVEMBER 22, 2011)



PROPERTY NO. 1
LEWIS & CLARK COMM. DEV.
PIN 0831-06-27-7545
DB 6058/771, PB 110/98
801 GILBERT STREET

PROPERTY NO. 2
AKRON PROPERTIES
PIN 0831-06-27-5584
DB 2735/383
990 PEARL STREET

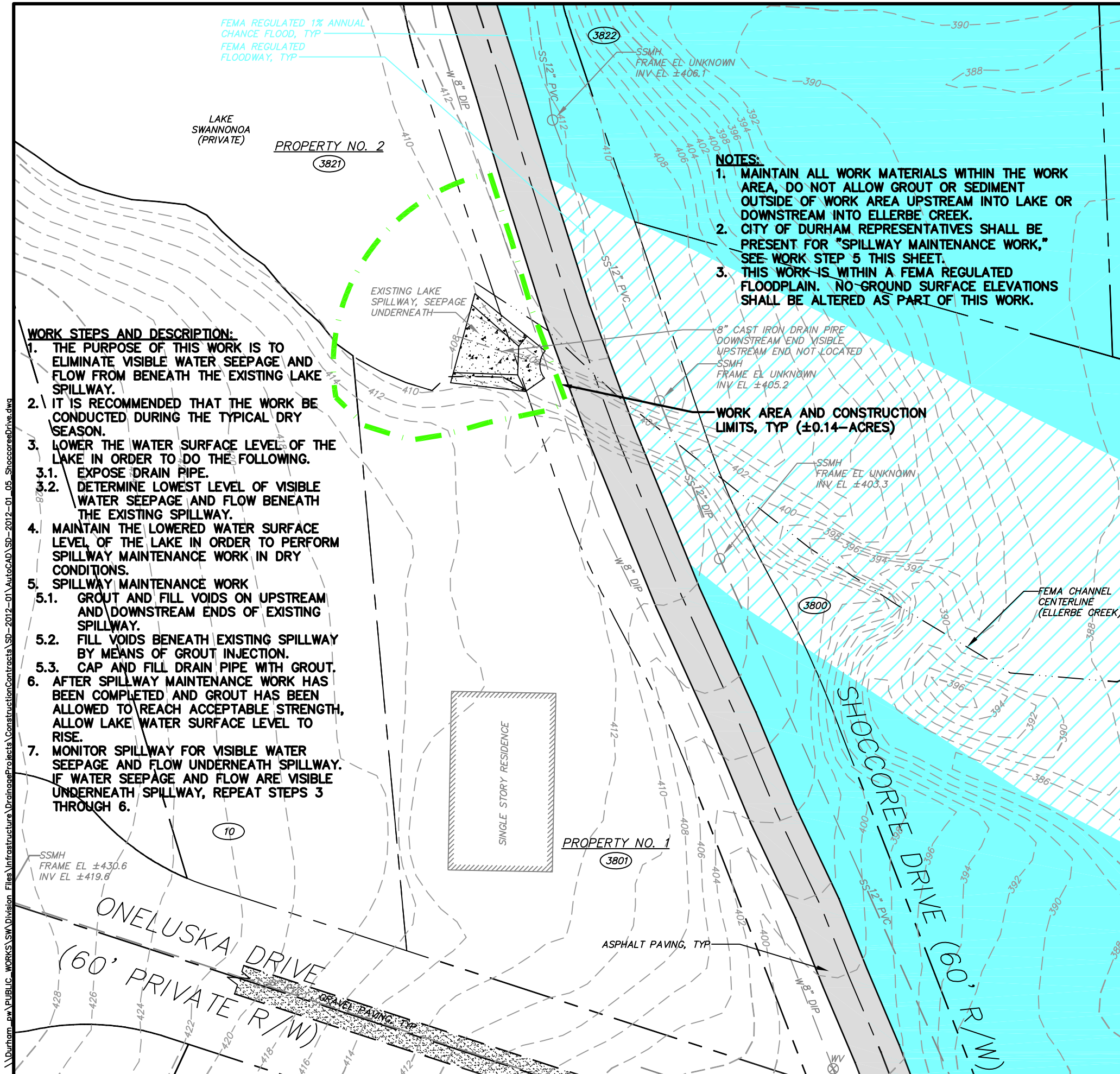
PROPERTY NO. 3
AKRON PROPERTIES
PIN 0831-10-27-5286
DB 3200/706, PB 110/172
708 GILBERT STREET

PROPERTY NO. 4
902 GILBERT STREET, LLC
PIN 0831-10-27-8269
DB 3312/330, PB 35/59
906 GILBERT STREET



NOTES:
1. NO PORTION OF THE PROJECT SITE SHOWN HERE LIES WITHIN A FEMA SFHA. FLOOD AREAS DETERMINED FROM FEMA FIRM 3720083100 J, EFFECTIVE DATE: 05/02/06.

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WORK STEPS AND DESCRIPTION:

1. THE PURPOSE OF THIS WORK IS TO ELIMINATE VISIBLE WATER SEEPAGE AND FLOW FROM BENEATH THE EXISTING LAKE SPILLWAY.
2. IT IS RECOMMENDED THAT THE WORK BE CONDUCTED DURING THE TYPICAL DRY SEASON.
3. LOWER THE WATER SURFACE LEVEL OF THE LAKE IN ORDER TO DO THE FOLLOWING.
 - 3.1. EXPOSE DRAIN PIPE.
 - 3.2. DETERMINE LOWEST LEVEL OF VISIBLE WATER SEEPAGE AND FLOW BENEATH THE EXISTING SPILLWAY.
4. MAINTAIN THE LOWERED WATER SURFACE LEVEL OF THE LAKE IN ORDER TO PERFORM SPILLWAY MAINTENANCE WORK IN DRY CONDITIONS.
5. SPILLWAY MAINTENANCE WORK
 - 5.1. GROUT AND FILL VOIDS ON UPSTREAM AND DOWNSTREAM ENDS OF EXISTING SPILLWAY.
 - 5.2. FILL VOIDS BENEATH EXISTING SPILLWAY BY MEANS OF GROUT INJECTION.
 - 5.3. CAP AND FILL DRAIN PIPE WITH GROUT.
6. AFTER SPILLWAY MAINTENANCE WORK HAS BEEN COMPLETED AND GROUT HAS BEEN ALLOWED TO REACH ACCEPTABLE STRENGTH, ALLOW LAKE WATER SURFACE LEVEL TO RISE.
7. MONITOR SPILLWAY FOR VISIBLE WATER SEEPAGE AND FLOW UNDERNEATH SPILLWAY. IF WATER SEEPAGE AND FLOW ARE VISIBLE UNDERNEATH SPILLWAY, REPEAT STEPS 3 THROUGH 6.

NOTES:

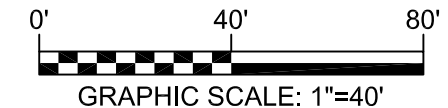
1. MAINTAIN ALL WORK MATERIALS WITHIN THE WORK AREA, DO NOT ALLOW GROUT OR SEDIMENT OUTSIDE OF WORK AREA UPSTREAM INTO LAKE OR DOWNSTREAM INTO ELLERBE CREEK.
2. CITY OF DURHAM REPRESENTATIVES SHALL BE PRESENT FOR "SPILLWAY MAINTENANCE WORK," SEE WORK STEP 5 THIS SHEET.
3. THIS WORK IS WITHIN A FEMA REGULATED FLOODPLAIN. NO GROUND SURFACE ELEVATIONS SHALL BE ALTERED AS PART OF THIS WORK.

WORK AREA AND CONSTRUCTION LIMITS, TYP (±0.14-ACRES)

CONTRACT: SD-2012-01
PROJECT: DPU-2010-001
SHOCCOREE DRIVE
SPILLWAY MAINTENANCE WORK
SHEET NO. 5

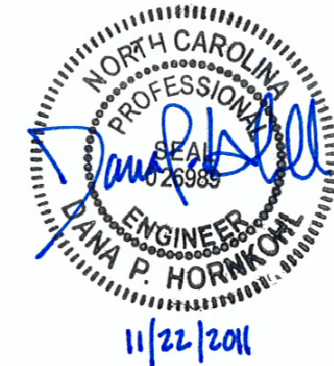
STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 12, 2011
(REVISED NOVEMBER 22, 2011)



PROPERTY NO. 1
PATRICIA BRANCH
PIN 0812-01-29-9385
DB 980/604, PB 31/1
3801 SHOCCOREE DRIVE
CONTACT NO.: UNKNOWN

PROPERTY NO. 2
GERALD BOWEN
PIN 0812-01-29-7515
DB 2549/210, PB 31/1
3821 SHOCCOREE DRIVE
CONTACT NO.: (919) 383-1446



NOTES:

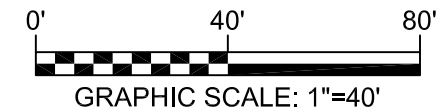
1. PORTIONS OF THE PROJECT SITE SHOWN HERE LIES WITHIN A FEMA SFHA. FLOOD AREAS DETERMINED FROM FEMA FIRM 3720081200 J, EFFECTIVE DATE: 05/02/06.

CONTRACT: SD-2012-01
PROJECT: DPU-2010-002

WEST KNOX STREET
PIPE REPLACEMENT WORK
SHEET NO. 6

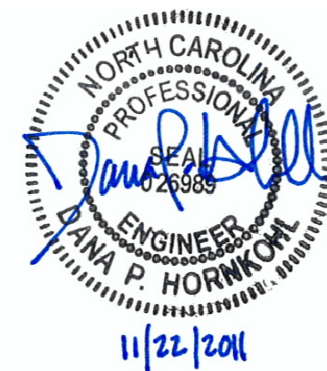
STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 12, 2011
(REVISED NOVEMBER 22, 2011)



PROPERTY NO. 1
ROGER & MARIE LAVIGNE
PIN 0822-15-73-3508
DB 1412/647, PB 3A/33
919 WEST KNOX STREET
CONTACT NO.: (919) 688-4402
SERVICE REQUEST NO.: 352491

PROPERTY NO. 2
KARTHIKEYAN GOPALAKRISHNAN
PIN 0822-15-73-3587
DB 6374/239, PB 3A/33
917 WEST KNOX STREET
CONTACT NO.: UNKNOWN



- NOTES:
- EXISTING STREET TREES WITHIN THE CONSTRUCTION LIMITS SHALL BE EVALUATED BY THE URBAN FORESTRY DIVISION OF THE CITY OF DURHAM, GENERAL SERVICE DEPARTMENT PRIOR TO COMMENCEMENT OF CONSTRUCTION. ANY TREE REMOVAL WILL BE CONDUCTED BY THE URBAN FORESTRY DIVISION AND IS NOT PART OF THE CONTRACT WORK.
 - CONTRACTOR SHALL COORDINATE CONTINUOUS ACCESSIBLE ACCESS TO 919 WEST KNOX STREET WITH PROPERTY OWNER THROUGHOUT THE WORK. CONTRACTOR, PROPERTY OWNER, AND CITY REPRESENTATIVE SHALL DISCUSS ACCESS ISSUES AT PRE-CONSTRUCTION MEETING, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
 - CONTRACTOR SHALL COORDINATE ANY DRIVEWAY CLOSURES WITH RESIDENTS OF WEST KNOX STREET PRIOR TO COMMENCING WORK.
 - ANY ORNAMENTAL TREES AND SHRUBS REQUIRING REMOVAL TO ACCOMPLISH WORK SHALL BE REMOVED, PROTECTED, SUSTAINED, AND REPLANTED IN ITS ORIGINAL LOCATION UNLESS OTHERWISE DIRECTED BY ENGINEER.
 - CONTRACTOR SHALL PERFORM A SURVEY OF THE RESIDENCE AT 919 WEST KNOX STREET TO ESTABLISH THE EXISTING CONDITIONS OF THE STRUCTURE PRIOR TO COMMENCING CONSTRUCTION.
 - CONTRACTOR SHALL COMPLETE THE WORK AT THIS SITE WITHIN THREE MONTHS OF COMMENCING CONSTRUCTION.

NOTES:

- NO PORTION OF THE PROJECT SITE SHOWN HERE LIES WITHIN A FEMA SFHA. FLOOD AREAS DETERMINED FROM FEMA FIRM 3720082200 J, EFFECTIVE DATE: 05/02/06.

REMOVE AND REPLACE ASPHALT PAVING AS NECESSARY TO REMOVE EXISTING UNEVEN PAVING (APPROXIMATELY 13-SY)

ADJUST FRAME AND GRATE OF EXISTING CATCH BASIN TO ENSURE POSITIVE DRAINAGE THROUGH LENGTH OF GUTTER

INSTALL MANHOLE RING AND COVER ON EXISTING JUNCTION BOX, MANHOLE COVER ELEVATION TO MATCH EXISTING GRADE

REMOVE AND REPLACE APPROXIMATELY 130-LF GRANITE CURB AND BRICK GUTTER WITH 2'-6" CONCRETE CURB AND GUTTER, RESTORE POSITIVE DRAINAGE THROUGH LENGTH OF GUTTER

REMOVE APPROXIMATELY 144-LF OF 48-INCH HDPE AND REPLACE WITH APPROXIMATELY 144-LF CLASS III RCP, MATCH EXISTING SLOPE

REMOVE 46" DIAMETER TREE

CONTRACTOR SHALL LOCATE ALL SERVICE CONNECTIONS TO RESIDENCE AND MAINTAIN SERVICES DURING CONSTRUCTION

REMOVE AND STORE LIGHT DURING PIPE EXCAVATION AND INSTALLATION

REMOVE AND REPLACE CONCRETE DRIVE AND WALK AS NECESSARY TO INSTALL STORM DRAINAGE PIPE (APPROXIMATELY 40-SY)

WEST KNOX STREET (60' R/W)

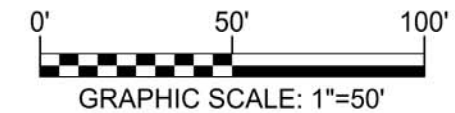
WORK AREA AND CONSTRUCTION LIMITS, TYP (± 0.20 -ACRES)

\\durham-pw\Public-Works\SW\Division Files\Infrastructure\Drainage\Projects\Construction\SD-2012-01\AutoCAD\SD-2012-01_06_WestKnoxStreet.dwg

CONTRACT SD-2012-01
PROJECT: DPU-2010-009
LONG MEADOW PARK
STORMWATER DRAINAGE REPAIRS
SHEET NO. 7

STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 12, 2011



PROPERTY OWNER
CITY OF DURHAM
PIN 0831-10-46-3598
DB 105 PG 18
917 LIBERTY STREET

COMPREHENSIVE GRADING:

THE WORK COVERED BY THIS LINE ITEM CONSISTS OF ALL ELEMENTS OF WORK COVERED BY "CLEARING & GRUBBING", "ROADWAY EXCAVATION", "REMOVAL OF EXISTING PAVEMENT", "FINE GRADING SUBGRADE, SHOULDERS, AND DITCHES", AND "SHOULDER CONSTRUCTION" IF APPLICABLE TO THE WORK SHOWN ON THE PLAN. THIS SHALL INCLUDE BUT NOT BE LIMITED TO THE EXCAVATION AND THE BACKFILLING NECESSARY FOR CATCH BASIN REHABILITATION. COMPREHENSIVE GRADING IS INCIDENTAL TO THE CONTRACT ITEM OF MOBILIZATION.



NOTES:

1. THE PROJECT SITE SHOWN HERE LIES WITHIN A FEMA SFHA. FLOOD AREAS DETERMINED FROM FEMA FIRM 3720083100 J, EFFECTIVE DATE: 05/02/06.

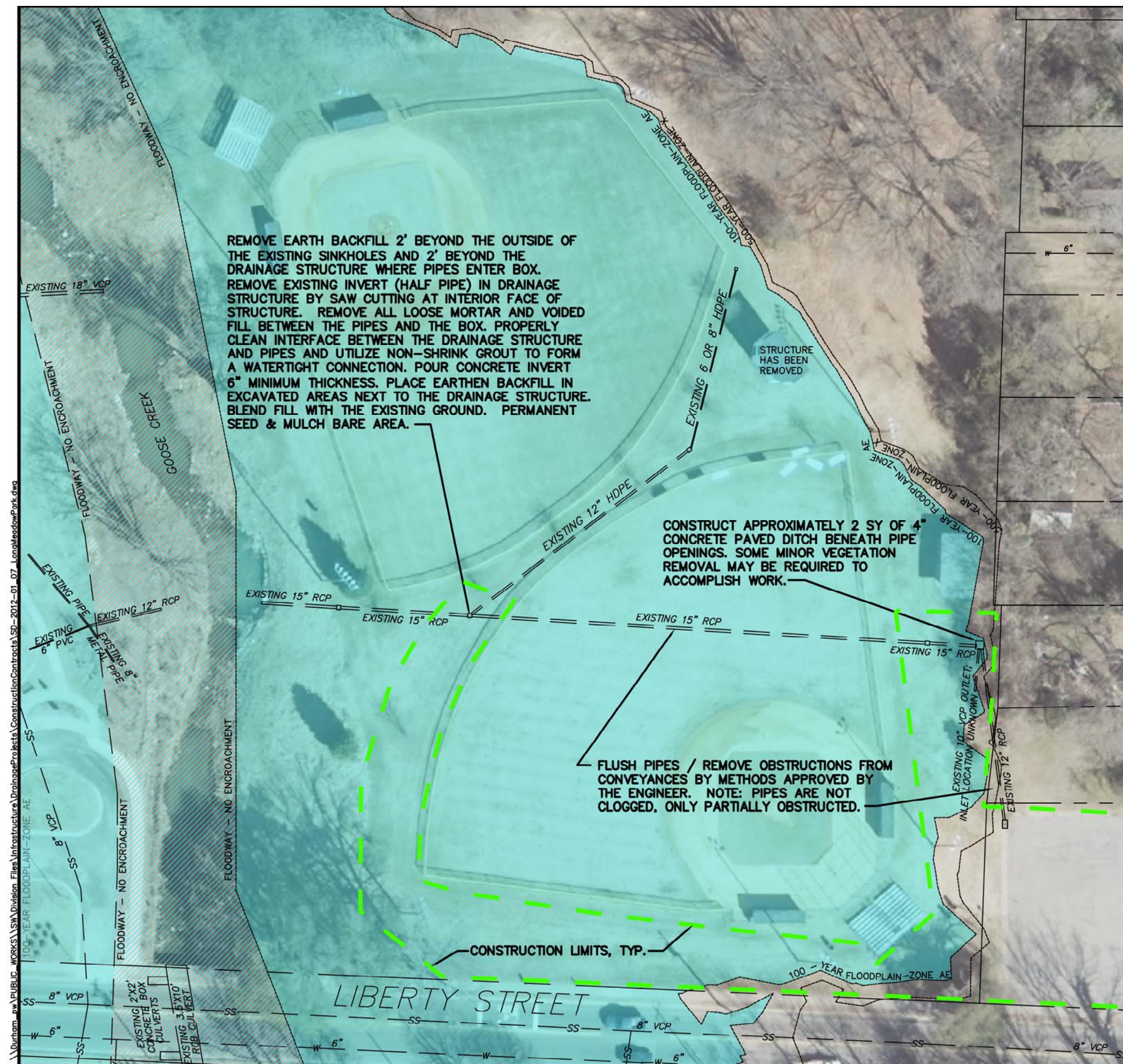
REMOVE EARTH BACKFILL 2' BEYOND THE OUTSIDE OF THE EXISTING SINKHOLES AND 2' BEYOND THE DRAINAGE STRUCTURE WHERE PIPES ENTER BOX. REMOVE EXISTING INVERT (HALF PIPE) IN DRAINAGE STRUCTURE BY SAW CUTTING AT INTERIOR FACE OF STRUCTURE. REMOVE ALL LOOSE MORTAR AND VOIDED FILL BETWEEN THE PIPES AND THE BOX. PROPERLY CLEAN INTERFACE BETWEEN THE DRAINAGE STRUCTURE AND PIPES AND UTILIZE NON-SHRINK GROUT TO FORM A WATERTIGHT CONNECTION. POUR CONCRETE INVERT 6" MINIMUM THICKNESS. PLACE EARTHEN BACKFILL IN EXCAVATED AREAS NEXT TO THE DRAINAGE STRUCTURE. BLEND FILL WITH THE EXISTING GROUND. PERMANENT SEED & MULCH BARE AREA.

CONSTRUCT APPROXIMATELY 2 SY OF 4" CONCRETE PAVED DITCH BENEATH PIPE OPENINGS. SOME MINOR VEGETATION REMOVAL MAY BE REQUIRED TO ACCOMPLISH WORK.

FLUSH PIPES / REMOVE OBSTRUCTIONS FROM CONVEYANCES BY METHODS APPROVED BY THE ENGINEER. NOTE: PIPES ARE NOT CLOGGED, ONLY PARTIALLY OBSTRUCTED.

CONSTRUCTION LIMITS, TYP.

LIBERTY STREET



CONTRACT SD-2012-01
PROJECT: DPU-2010-026

SHERBON DRIVE
STORMWATER DRAINAGE REPAIRS
SHEET NO. 8

STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 12, 2011
(REVISED NOVEMBER 22, 2011)



PROPERTY OWNER
Mary L. Harris
PIN 0810-11-65-3282
DB 278/325, PB 35/71
3200 SHERBON DRIVE
CONTACT NO.: 919.489.2605



NOTES:

1. THE PROJECT SITE SHOWN HERE LIES WITHIN A FEMA SFHA AND IS SUBJECT TO THE CONDITIONS OF THE FLOODPLAIN DEVELOPMENT PERMIT. FLOOD AREAS DETERMINED FROM FEMA FIRM 3720081000 K, EFFECTIVE DATE: 08/02/07.

REMOVE 52 LF OF EXISTING 24" RCP AND BACKFILL TRENCH WITH SUITABLE MATERIAL WHERE THE PIPE REMOVAL IS BEYOND THE TRENCH TO LAY THE PROPOSED 24" RCP

INSTALL APPROXIMATELY 7 LF OF 24" CLASS III RCP WHICH INCLUDES A FLARED END SECTION AT 0.6% SLOPE; SET END OF PIPE 6" UPSTREAM FROM SEWER LATERAL

REWORK IRREGULARITIES ON SIDE SLOPES OF CHANNEL, PERMANENT SEED, AND STABILIZE WITH MATTING FOR EROSION CONTROL.

INSTALL APPROXIMATELY 39 LF OF 24" CLASS III RCP W/ O-RING GASKETS AT 0.6% SLOPE

CONSTRUCTION LIMITS
±0.08-ACRES

EXISTING 4" DUCTILE IRON SEWER LATERAL

CLASS B RIP RAP APRON
12'L X 6'W X 1.5' THICK
W/ FILTER FABRIC UNDERLAYMENT

22 LF OF STANDARD 2'-6" CURB & GUTTER; SLOPE GUTTER FLOW TOWARD CATCH BASIN OPENING AS FEASIBLE

TYPE 1 CATCH BASIN MODIFIED TO 6' WIDTH AND TOP SLAB RISER; DROP INVERT 0.1' THROUGH STRUCTURE. SEE SHEET 2 OF 2

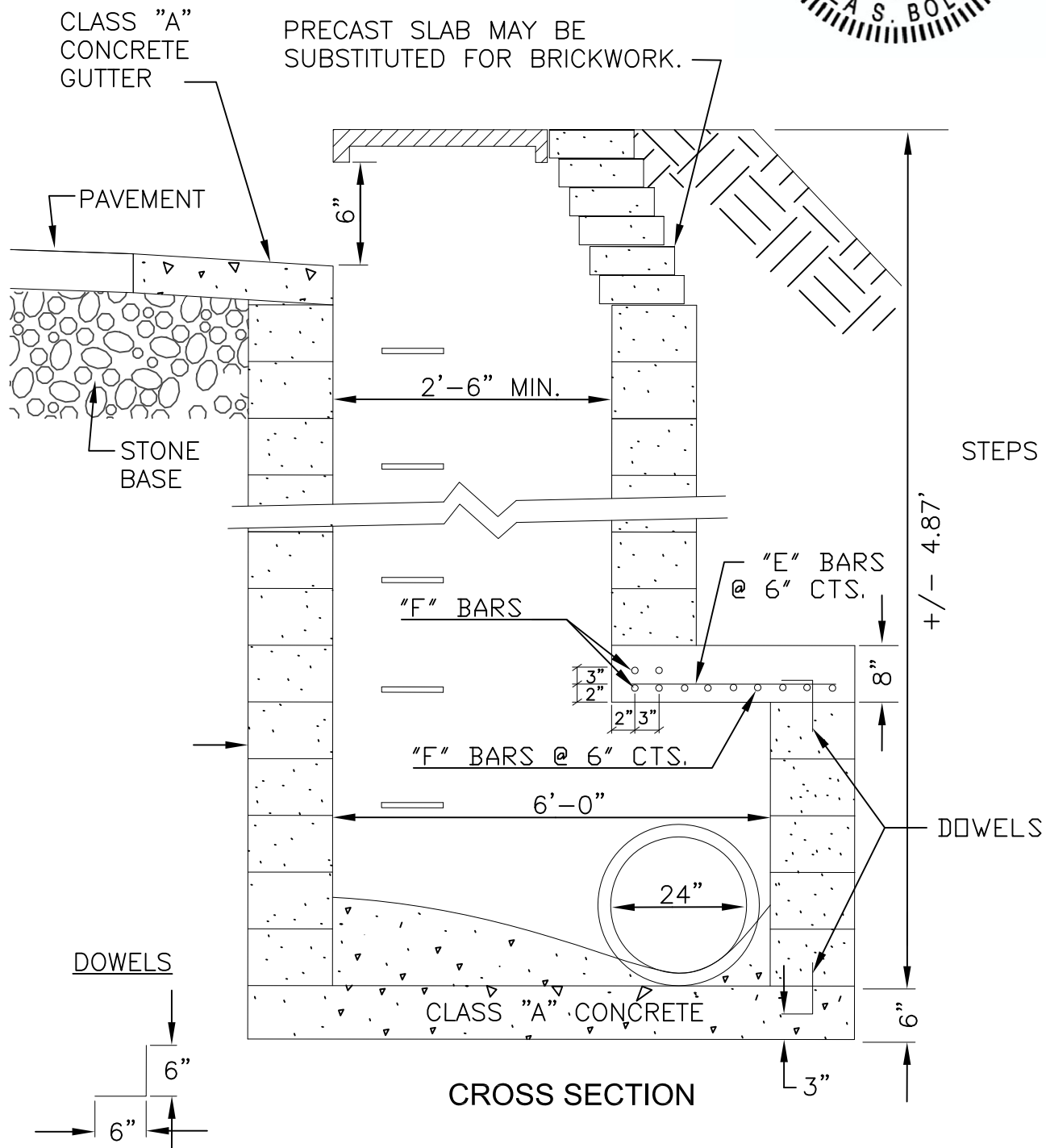
REMOVE 5 LF OF EXISTING C&G AND REPLACE WITH SECTION THAT HAS CORRECT GUTTER SLOPE TO PROPOSED CATCH BASIN

REGRADE SLOPE TO BLEND IN WITH EXISTING GROUND/YARD. COVER DENUDED AREA WITH 3" OF MULCH TO MATCH EXISTING. MULCH TO BE PAID FOR ON A SQUARE YARD BASIS UNDER THE CONTRACT ITEM PERMANENT SEEDING & MULCHING. ANY ORNAMENTAL TREES AND SHRUBS REQUIRING REMOVAL TO ACCOMPLISH WORK SHALL BE REMOVED, PROTECTED, SUSTAINED, AND REPLANTED IN ITS ORIGINAL LOCATION UNLESS DIRECTED OTHERWISE BY ENGINEER. ALL GRADING AND TREE/SHRUB REMOVAL & REPLACEMENT WORK DESCRIBED SHALL BE INCIDENTAL TO MOBILIZATION.



REVISION DATE:
9/12/2011

CONTRACT SD-2012-01
PROJECT DPU-2010-026
SHERBON DRIVE CATCH BASIN DETAIL
MODIFIED TYPE 1 CATCH BASIN WITH CURB INLET

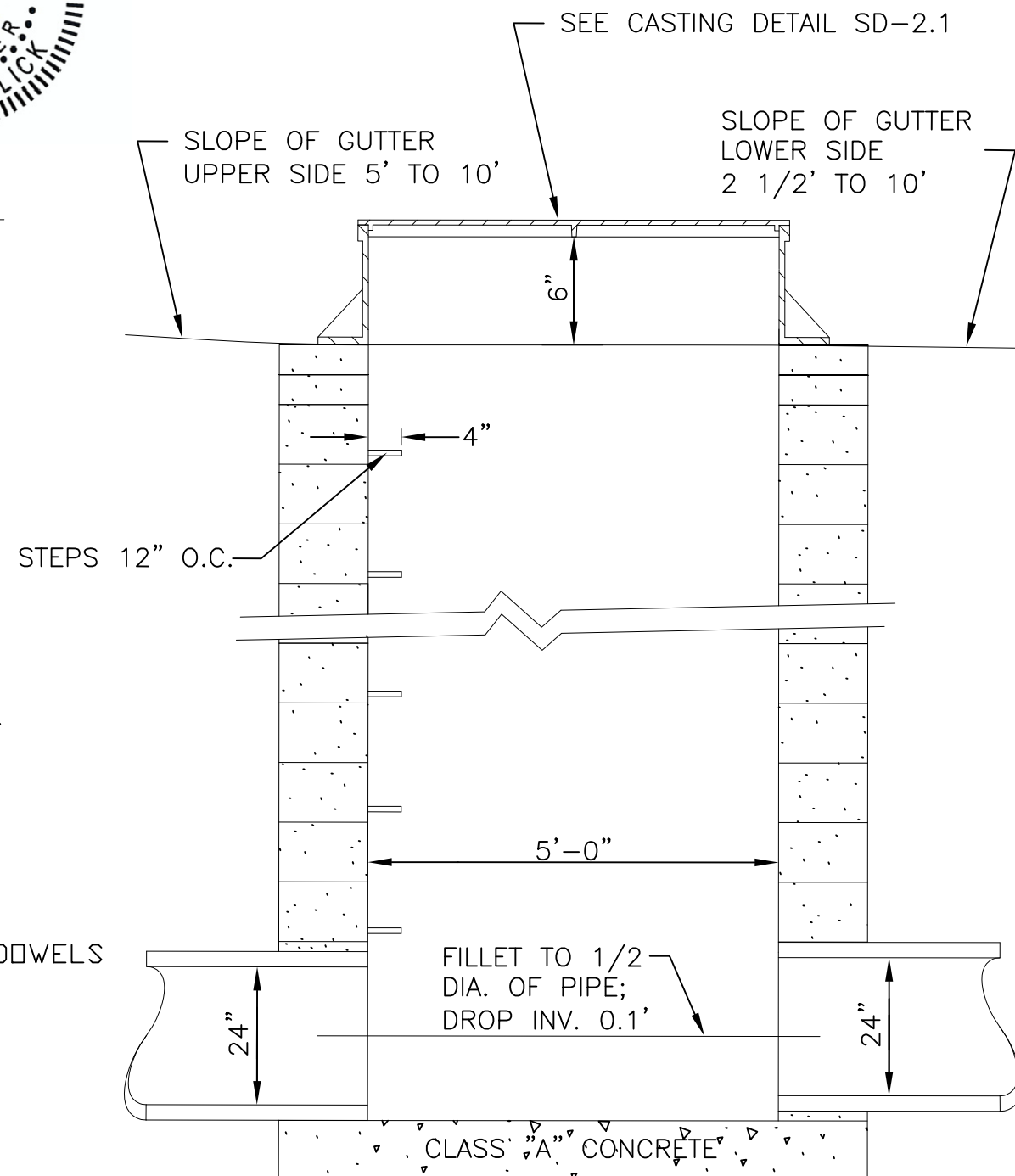


CROSS SECTION

NO. 4 BARS SPACED @
12" CENTERS; 10 TOTAL;
5 TOP SLAB & 5
BOTTOM SLAB

"F" BARS - NO. 4 BARS
6'-1" IN LENGTH SPACED
@ 6" CENTERS; 11 TOTAL;
1.5" COVER MINIMUM

"E" BARS - NO. 4 BARS
3'-11" IN LENGTH SPACED
@ 6" CENTERS; 11 TOTAL;
1.5" COVER MINIMUM



LONGITUDINAL SECTION

SEE GENERAL NOTES DETAIL SD-1.0

SCALE:
NTS

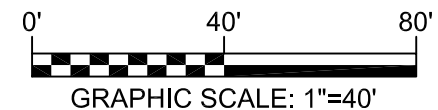
SHEET NO.
8A

CONTRACT: SD-2012-01
PROJECT: DPU-2010-027

NINTH STREET
DEBRIS REMOVAL
SHEET NO. 9

STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 12, 2011



REMOVE DEBRIS FROM BOX
CULVERT, SEE PHOTO (THIS
SHEET) FOR SIZE, TYPE, AND
AMOUNT OF DEBRIS. WORK
SHALL INCLUDE REMOVING ALL
DEBRIS WITHIN BOX CULVERT
UPSTREAM OF SANITARY
SEWER CROSSING.

EXISTING CB
FRAME EL ± 366.0
INV EL ± 364.2

EXISTING CB
FRAME EL ± 366.2
INV EL ± 363.9

EXISTING CB
FRAME EL ± 367.9
INV EL ± 364.9

EXISTING CB
FRAME EL ± 366.7
INV EL ± 364.6

EXISTING CB
FRAME EL ± 366.7
INV EL ± 361.3

OBTAIN ACCESS TO BOX
CULVERT THROUGH
EXISTING CATCH BASIN
WORK AREA AND CONSTRUCTION
LIMITS, TYP (± 0.02 -ACRES)

PROPERTY NO. 1

(811)

PROPERTY NO. 1
NSN811, LLC
PIN 0822-14-33-0001
DB 4641/271, PB 149/191
811 NINTH STREET
CONTACT NO.: UNKNOWN

ASPHALT PAVING, TYP

(LOCAL)

SSMH
FRAME EL UNKNOWN
INV EL UNKNOWN

SINGLE STORY COMMERCIAL BUILDING

SSMH
FRAME EL UNKNOWN
INV EL UNKNOWN

EXISTING CB
FRAME EL ± 366.4
INV EL ± 364.1

EXISTING CB
FRAME EL ± 367.4
INV EL ± 364.9

SSMH ($\pm 8.5'$ DEEP)
FRAME EL ± 367.4
INV EL UNKNOWN

EXISTING CB
FRAME EL ± 366.7
INV EL ± 362.4

WV ($\pm 5.5'$ DEEP)

EXISTING CB/
FRAME EL ± 366.5
INV EL ± 363.0

EXISTING CB
FRAME EL ± 366.6
INV EL ± 363.1

SSMH ($\pm 6.5'$ DEEP)
FRAME EL UNKNOWN
INV EL UNKNOWN

(LOCAL)

STORMWATER
CHANNEL

INV EL UNKNOWN
4' X 8' CONCRETE
BOX CULVERT

(821)



PHOTO TAKEN FROM DOWNSTREAM CATCH BASIN LOOKING UPSTREAM

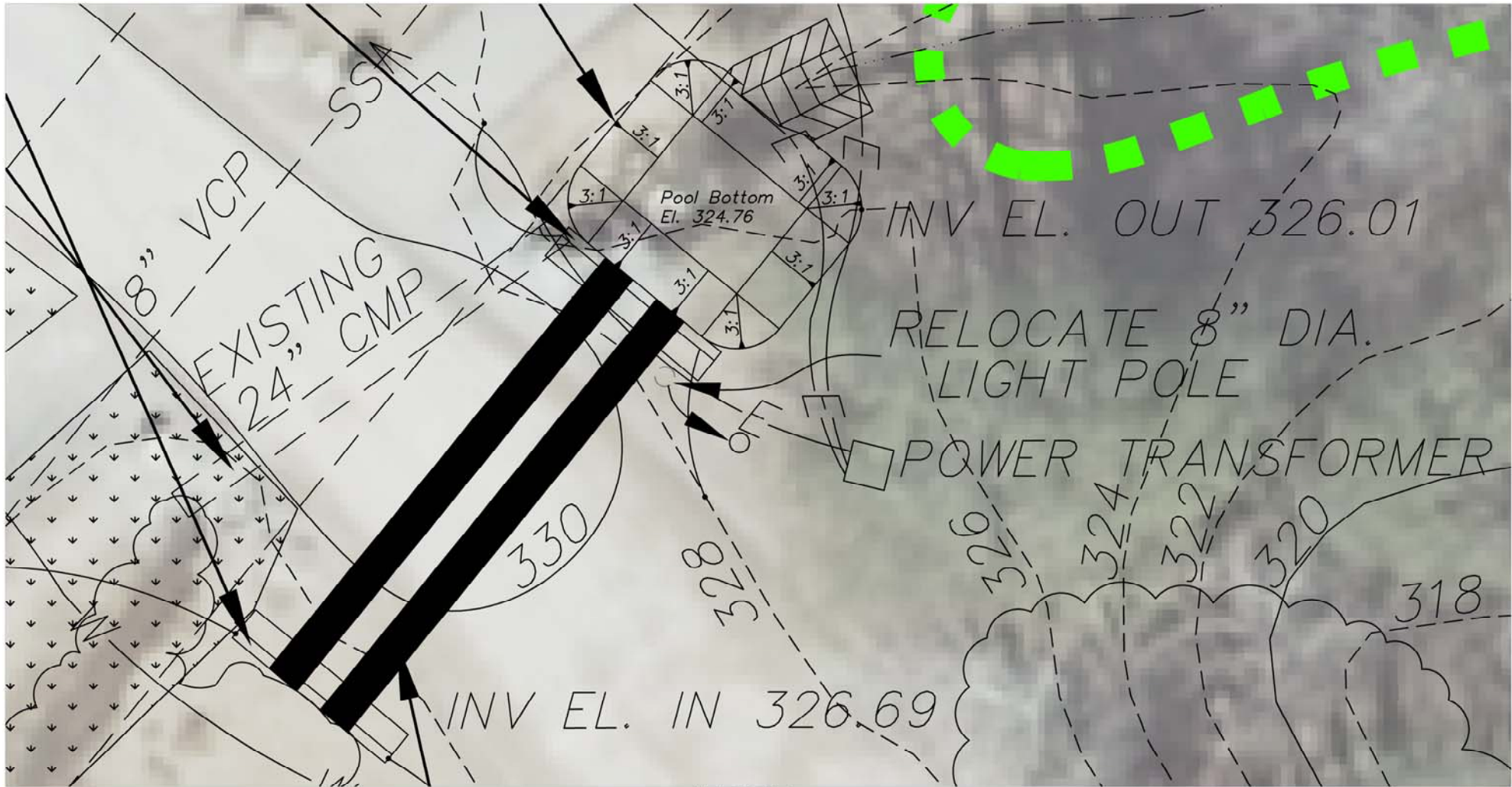


NOTES:

1. NO PORTION OF THE PROJECT SITE SHOWN HERE LIES WITHIN A FEMA SFHA. FLOOD AREAS DETERMINED FROM FEMA FIRM 3720082200 J, EFFECTIVE DATE: 05/02/06.

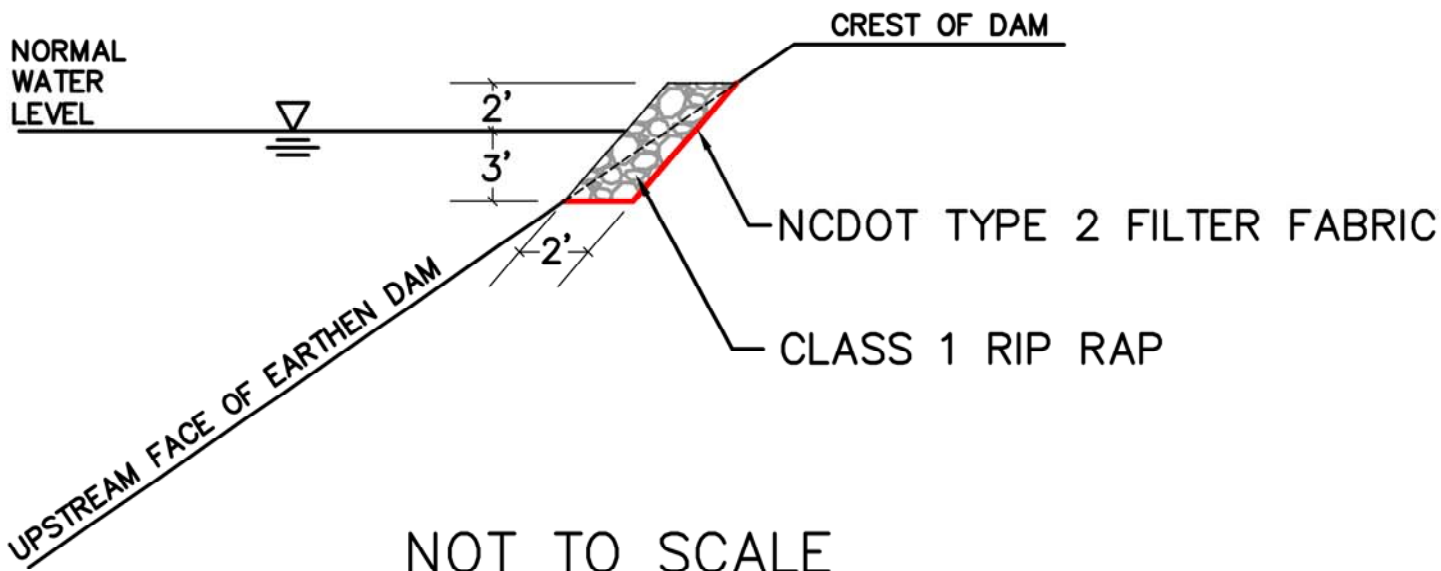
\\Durham_pw\public_works\SW\Division Files\Infrastructure\DrainageProjects\ConstructionContracts\SD-2012-01\AutoCAD\SD-2012-01_10_TwinLakesPark.dwg

\\Durham-pw\public_works\SW\Division Files\Infrastructure\Drainage\Projects\Construction\Contracts\SD-2012-01\AutoCAD\SD-2012-01_TwinLakesPark.dwg



INSET

RIP RAP EMBANKMENT PROTECTION DETAIL



NOT TO SCALE

CONTRACT SD-2012-001 PROJECT DPU-2011-003 TWIN LAKES PARK MAINTENANCE & ENHANCEMENTS SHEET NO. 10A

STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 12, 2011



PROPERTY OWNER
CITY OF DURHAM
PIN 0841-02-87-0651 & 4350
DB 310 PG 147, DB 413 PG 226, PB 28 PG 55
251, 302, 334 LAKECREST DR. & 501 CHANDLER RD.

COMPREHENSIVE GRADING:
THE WORK COVERED BY THIS LINE ITEM CONSISTS OF ALL ELEMENTS OF WORK COVERED BY "CLEARING & GRUBBING", "ROADWAY EXCAVATION", "REMOVAL OF EXISTING PAVEMENT", "FINE GRADING SUBGRADE, SHOULDERS, AND DITCHES", AND "SHOULDER CONSTRUCTION" IF APPLICABLE TO THE WORK SHOWN HEREON. THIS SHALL INCLUDE BUT NOT BE LIMITED TO SELECTIVE TREE REMOVAL ON THE EARTHEN DAM EMBANKMENTS, FILLING OF BURROWS & DEPRESSIONS, REMOVAL OF OLD BEAVER DAM, SHAPING OF PREFORMED SCOUR HOLE, EXCAVATION FOR RIP RAP EMBANKMENT PROTECTION, BLENDING THE EXISTING GRADE INTO THE NEW END WALL(S), AND OUTLET CHANNEL DEBRIS REMOVAL. LOWERING THE WATER LEVEL OF THE PONDS OR OTHER METHODS PROPOSED TO ACCOMPLISH THE NECESSARY WORK SHALL BE APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT AND IS INCIDENTAL TO THE CONTRACT ITEM OF MOBILIZATION, WHICH COMPREHENSIVE GRADING IS INCLUDED.



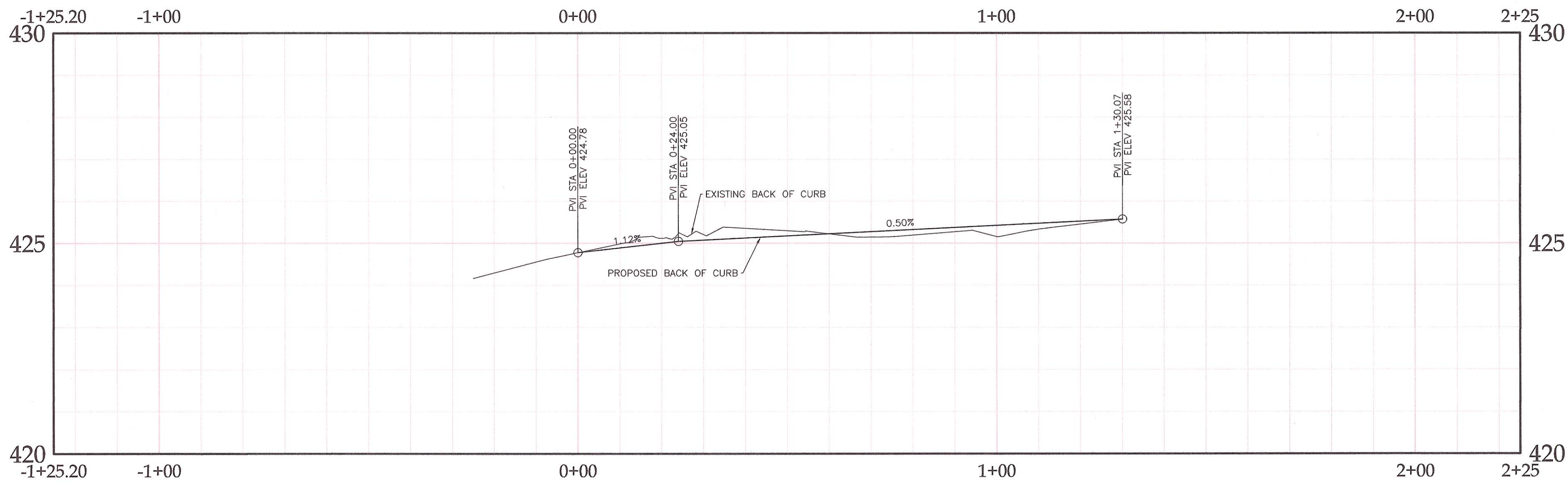
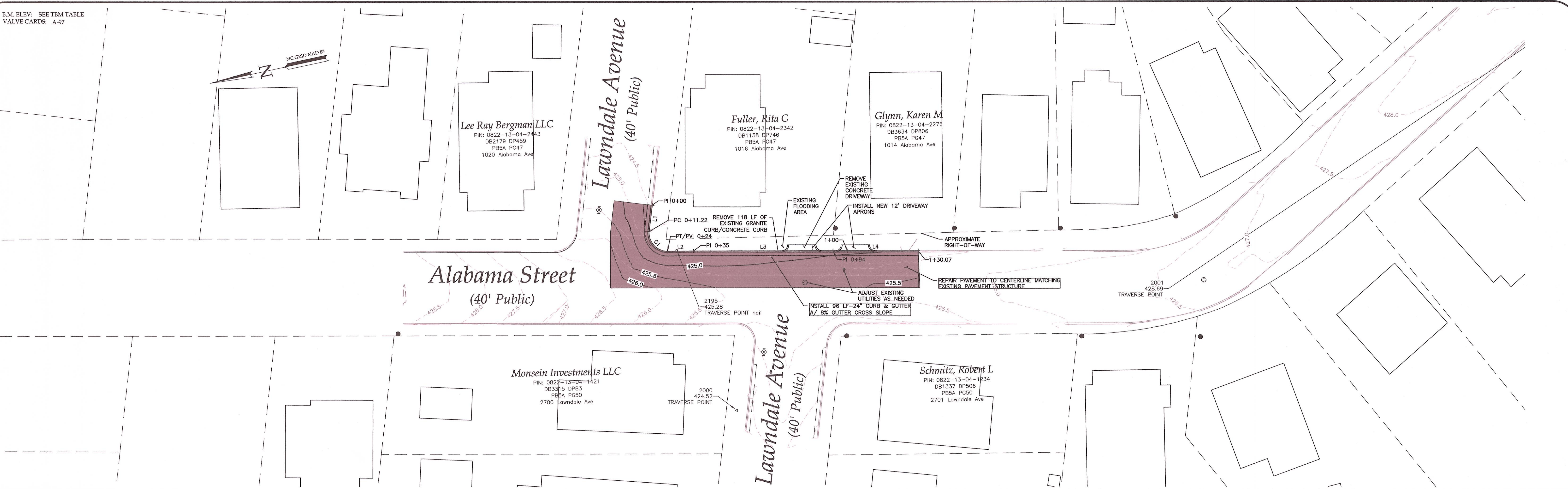
- NOTES:
1. A PORTION OF THE PROJECT SITE SHOWN HERE LIES WITHIN A REGULATED SFHA. FLOOD AREAS DETERMINED FROM FEMA FIRM 3720084100 J, EFFECTIVE DATE: 05/02/06.

\\Durham_pw\public_works\SW\Division Files\Infrastructure\DrainageProjects\ConstructionContracts\SD-2012-01\AutoCAD\SD-2012-01_11_AlexanderAvenue.dwg

1. NO PORTION OF THE PROJECT SITE SHOWN HERE LIES WITHIN A FEMA SFHA. FLOOD AREAS DETERMINED FROM FEMA FIRM 3720082100 K, EFFECTIVE DATE: 08/02/07.

NOTE:
PERMANENT SEED AND MULCH ALL
DISTURBED AREAS AFTER CONSTRUCTION
IS COMPLETE.

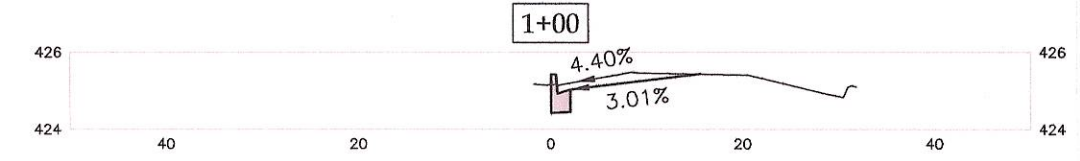
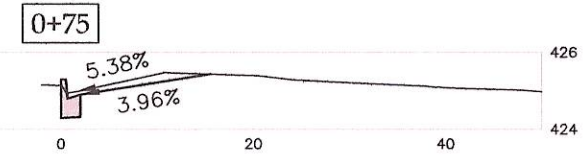
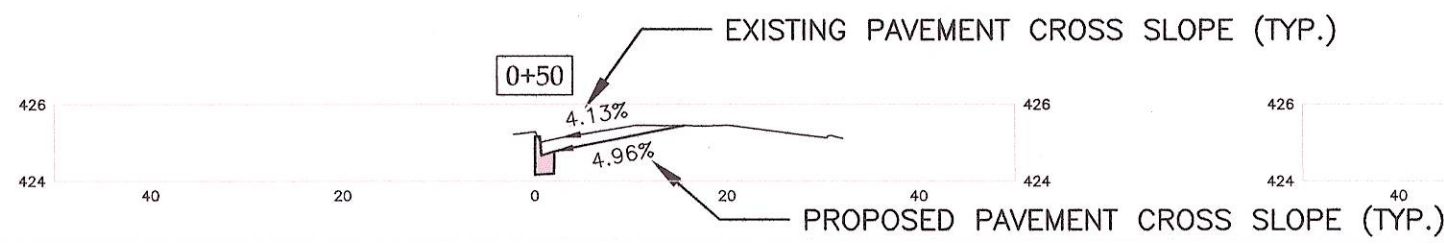
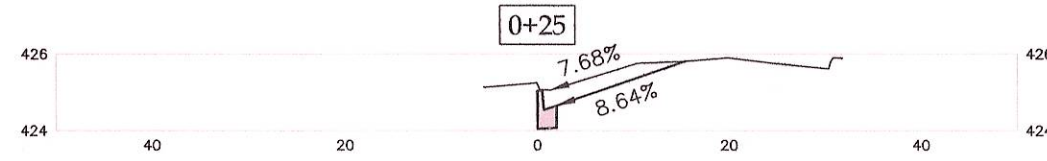
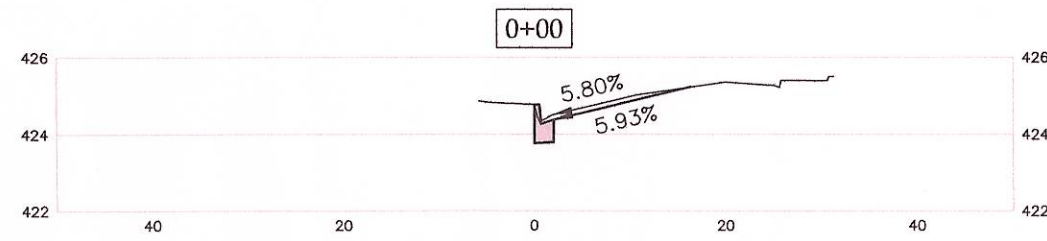
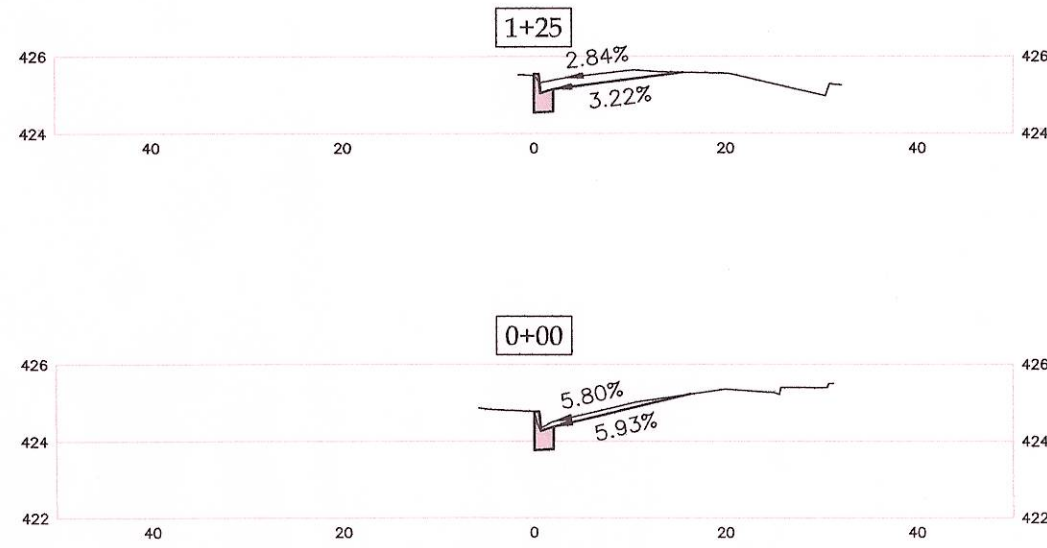
B.M. ELEV.: SEE TBM TABLE
VALVE CARDS: A-97



| TBM/SURVEY CONTROL TABLE | | | | |
|--------------------------|-----------------|-----------|-----------|------------|
| Point # | Row Description | Elevation | Northing | Easting |
| 2000 | 25 | 424.52 | 824326.72 | 2020121.96 |
| 2001 | 25 | 428.69 | 823938.60 | 2020349.17 |
| 2195 | 25 nail | 425.28 | 824356.59 | 2020187.60 |

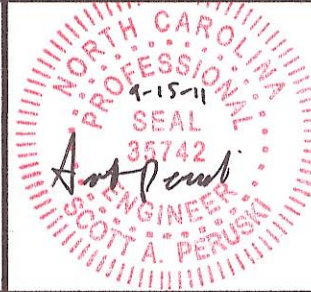
| Line Table: Alignments | | | | |
|------------------------|--------|-------------|-----------------------|-----------------------|
| Line # | Length | Direction | Start Point | End Point |
| L1 | 11.22 | N87°02'40"W | 2020205.83, 824368.21 | 2020194.63, 824368.79 |
| L2 | 11.00 | S04°41'38"E | 2020186.88, 824360.48 | 2020187.78, 824349.52 |
| L3 | 59.00 | S04°04'25"E | 2020187.78, 824349.52 | 2020191.97, 824290.67 |
| L4 | 36.07 | S03°56'38"E | 2020191.97, 824290.67 | 2020194.45, 824254.68 |

| Curve Table: Alignments | | | | |
|-------------------------|--------|--------|-----------------|-----------------------|
| Curve # | Radius | Length | Chord Direction | Start Point |
| C1 | 7.69 | 12.78 | S43°00'53"W | 2020194.63, 824368.79 |
| | | | | 2020186.88, 824360.48 |



CROSS SECTIONS
Scale: 1"=20'H, 1"=2'V

| LEGEND | | | |
|--------|------------------------|--|---------------------|
| | MAINLINE VALVE | | SURVEY/CONTROL NAIL |
| | O.C. BOX | | IRON PIN |
| | WATER METER | | MONUMENT |
| | FIRE HYDRANT | | RIGHT-OF-WAY LINE |
| | BEND | | PROPERTY LINE |
| | BLOW-OFF | | EASEMENT LINE |
| | TAPPING SLEEVE & VALVE | | UTILITY POLE |
| | WELL | | CUT SLOPE |
| | SEWER CLEANOUT | | FILL SLOPE |
| | SEWER MANHOLE | | DITCH LINE |
| | FLOOR ELEVATION LEFT | | FIBER OPTIC CABLE |
| | GROUND ELEVATION | | POWER LINE |
| | BASMENT ELEVATION | | TELEPHONE LINE |
| | TYPE I/II CATCH BASIN | | TELEPHONE BOX |
| | TYPE III YARD INLET | | CABLE TV LINE |
| | STORMWATER MANHOLE | | CABLE TV BOX |
| | | | GAS LINE |



| CITY OF DURHAM PUBLIC WORKS DEPARTMENT — APPROVED — | |
|---|------|
| ENGINEERING | DATE |
| STORM WATER | DATE |
| TRANSPORTATION | DATE |

| NO. | REVISIONS | DATE | SYSTEM | DESIGN BY: | DESIGN DATE | CONSTR. DATE |
|-----|-----------|------|--------------|------------|-------------|--------------|
| | | | WATER | | | |
| | | | SAN. SEWER | | | |
| | | | STM. SEWER | | | |
| | | | STREET IMP. | SCOTT P | 9/12/2011 | |
| | | | SOIL & EROS. | | | |

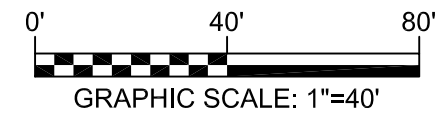
| Alabama Avenue CURB & GUTTER REPAIR, REPAVE TO MID LANE | | | |
|--|--|--|--------------|
| City of Durham Department of Public Works - 101 City Hall Plaza Durham, NC 27701 - (919)560-4326 | | | |
| Scale: 1"=20' (HORIZ.), 1"=2' (VERT.) | | | SHEET NO: 12 |

CONTRACT: SD-2012-01
PROJECT: DPU-2010-52

CAROLINA AVENUE
DEBRIS REMOVAL
SHEET NO. 13

STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 12, 2011



PROPERTY NO. 1
KENNETH & SUZANNE HAYES
PIN 0822-13-13-8280
DB 6229/851, PB 15/55
817 CAROLINA AVENUE
CONTACT NO.: (540) 719-0209, HOME
CONTACT NO.: (774) 278-1489, MOBILE
SERVICE REQUEST NO. 442319

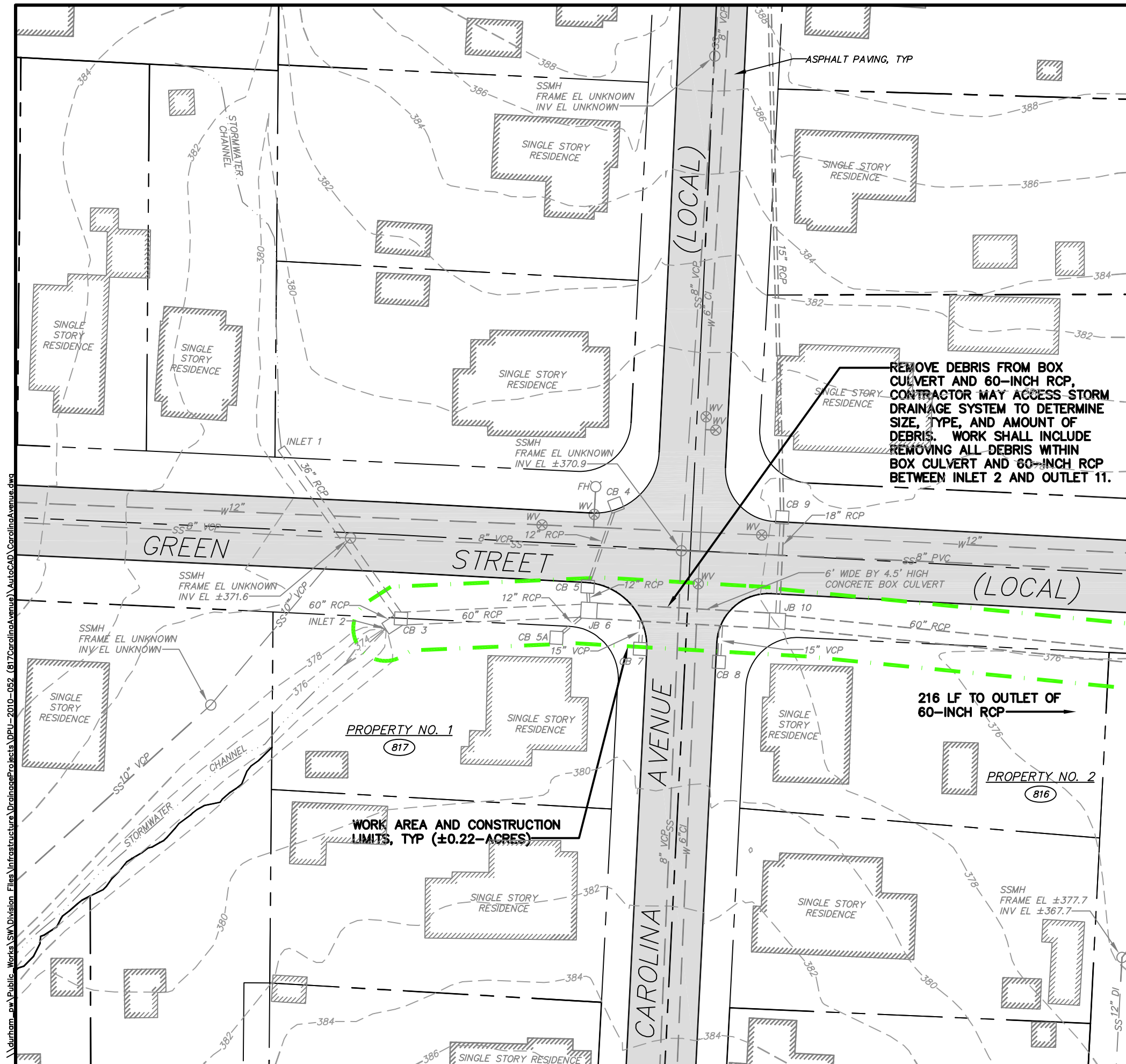
PROPERTY NO. 2
LISA CROUCHER
PIN 0822-13-23-0179
DB 6762/943, PB 15/55
816 CAROLINA AVENUE
CONTACT NO.: UNKNOWN

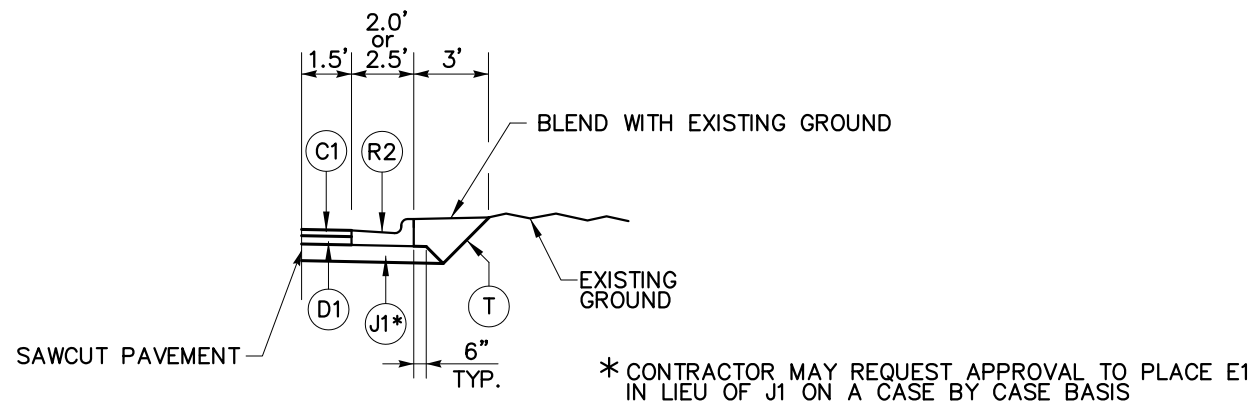
| STORM DRAINAGE STRUCTURE DATA | | |
|-------------------------------|------------|----------|
| STRUCTURE NO. | FRAME EL ± | INV EL ± |
| INLET 1 | N/A | 377.0 |
| INLET 2 | 379.1 | 372.9 |
| CB 3 | UNKNOWN | UNKNOWN |
| CB 4 | 377.5 | 375.5 |
| CB 5 | 378.1 | 374.9 |
| CB 5A | 377.6 | 375.9 |
| JB 6 | 379.3 | 372.8 |
| CB 7 | 378.4 | 375.1 |
| CB 8 | 378.1 | 375.7 |
| CB 9 | 376.9 | 374.3 |
| JB 10 | 377.7 | 371.4 |
| OUTLET 11 | 373.9 | UNKNOWN |



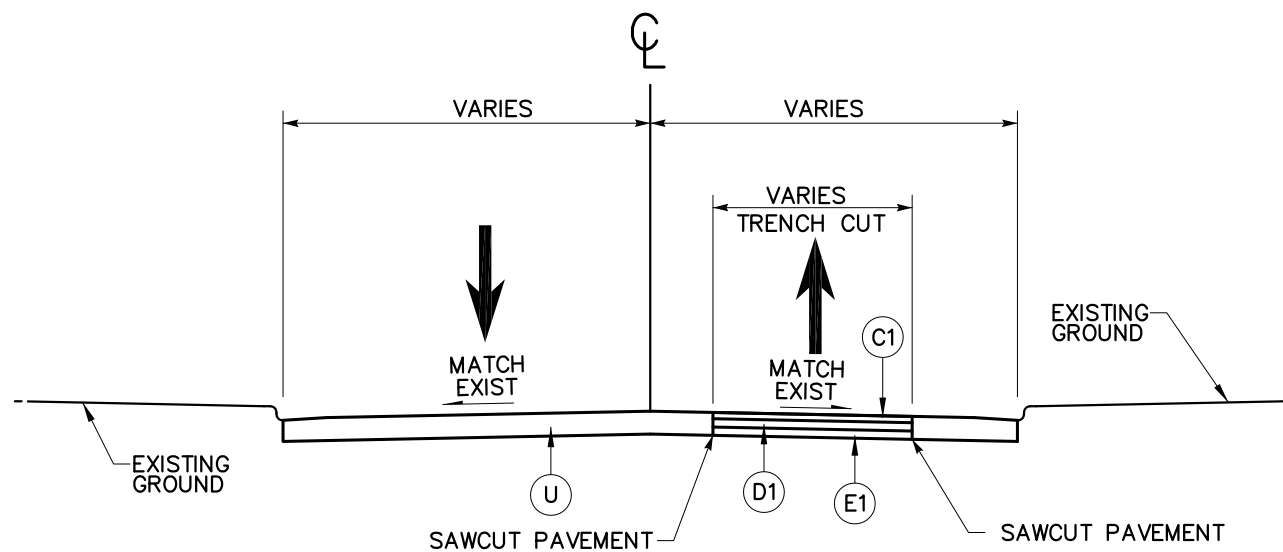
NOTES:

- NO PORTION OF THE PROJECT SITE SHOWN HERE LIES WITHIN A FEMA SFHA. FLOOD AREAS DETERMINED FROM FEMA FIRM 3720082200 J, EFFECTIVE DATE: 05/02/06.
- ACCESS STORM DRAINAGE SYSTEM FROM RIGHT-OF-WAY FOR DEBRIS REMOVAL.

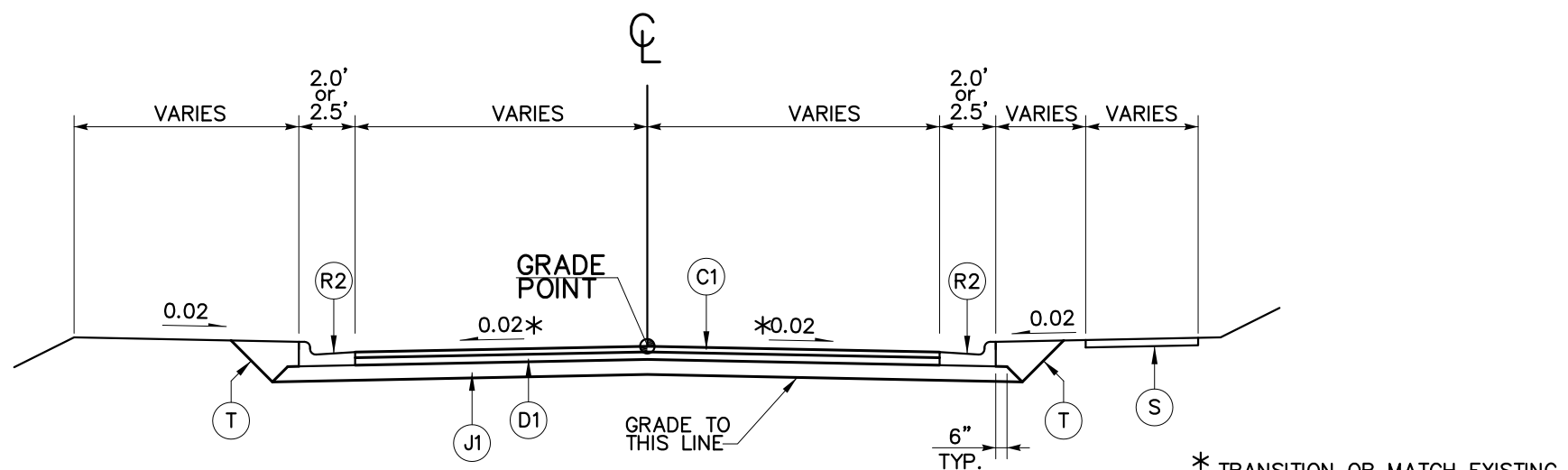




CURB & GUTTER INSTALLATION TYPICAL SECTION



PAVEMENT TRENCH REPAIR TYPICAL SECTION



PAVING TYPICAL SECTION

CONTRACT SD-2012-01

ASPHALT PAVING / REPAIR DETAILS STORMWATER DRAINAGE REPAIRS SHEET NO. 14

STORMWATER SERVICES DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF DURHAM, NORTH CAROLINA

SEPTEMBER 2011



PAVEMENT SCHEDULE

| | |
|-----------|--|
| C1 | PROPOSED APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. PER 1.5" DEPTH IN EACH OF TWO LAYERS. |
| D1 | PROPOSED APPROX. 4.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| E1 | PROPOSED APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| J1 | PROPOSED 8" AGGREGATE BASE COURSE |
| R2 | 2'-0" OR 2'-6" CONCRETE CURB AND GUTTER AS SPECIFIED |
| S | PROPOSED 4" CONCRETE SIDEWALK |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |